

Application of Chih-Ta Star Sung – U.S. Application No. 10/712,138

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Therefore, the Applicant respectfully submits you allow Claim 7.

Claim 8: The present claim teaches that a weighted block difference between the target block and a neighboring block is within tolerance to determine whether it can be classified as a match. Which is different from the quoted prior arts quoted in Wee et al. US 6697061 (Column 8, Line 26-33) which teaches again, the saving of times of compressing the block pixels in motion estimation and the Examiner really teaches some sense in saving times of block video compression specifically in motion estimation only, but does not teach any idea in **decompressing** a video block of bit stream.

Therefore, the Applicant respectfully submits you allow Claim 8.

Claim 9: The present claim teaches that a weighted block difference between the target block and a previously decompressed block is within the tolerance to determine whether it can be classified as a match and using the decompressed data of the matched block to represent the target block. Which is different from the quoted prior arts quoted in Owen et al. US 6028635 (Column 7, Line 54 to Column 8, Line 6) or Wee et al. US 6697061 Column 2, Line 32-37, which teaches again, the saving of times of compressing the block pixels in motion estimation in saving times of block video

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compression specifically in motion estimation only, but does not teach any idea in **decompressing** a video block of bit stream.

Therefore, the Applicant respectfully submits you allow Claim 9.

Claim 10: Applicant agrees at canceling this claim.

Claim 11: The present claim teaches that the decompressed block is compressed again before storing to the on-chip temporary buffer. Which is different from the quoted prior arts quoted in Owen et al. US 6028635 Column 6, Line 34-38 which or Column 8, Line 39-41 re-compresses the decompressed block of data and storing to a DRAM off-chip memory buffer to save the time of accessing.

Therefore, the Applicant respectfully submits you allow Claim 11, with the following updated Claim:

Claim 11. The method of claim 1, wherein a **block of** decompressed bit stream is compressed before **being stored to the second temporary storage** buffer for future representing new block stream. Owen et al does not teach this art, instead, it talks on the saving times of storing the recovered pixels.

Claim 12: the decompressed block is compressed again by a lossless compression

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algorithm before storing to the on-chip temporary buffer. This method which will not create error or will not propagate the error to other frames, and is different from the quoted prior arts quoted in Oami et al. US 6363119 (Column 1, Lines 7-11) or Owen which teaches again, the saving of times of compressing the block pixels in motion estimation in saving times of block video compression specifically in motion estimation only, but does not teach any idea in **recompressing** a video block of bit stream. Oami et al. US 6363119 (Column 4, Lines 55-62) indeed teaches what the Examiner think an **obvious perspective** since most people only know the lossy algorithms. Even those few people do not necessary understand the value of applying a lossless compression algorithm to help further reducing the cost and die size of the on-chip secondary temporary buffer.

Therefore, the Applicant respectfully submits you allow Claim 12, with the following updated Claim:

Claim 12: The method of claim 1, wherein a block of decompressed bit stream is compressed through a lossless compression mechanism before being stored to an on-chip secondary temporary buffer and is decompressed for future representing a new block stream.

Claim 16 recites an apparatus of this invention of efficient video bit stream decoding

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including three units: one to store the coming video stream and the decompressed previous stream of at least one block of pixels, another unit compares the new video stream to one of the previously decoded streams, and a selector choose the matched block of pixels to represent the new block.

In contrast, Owen et al. US 6028635 teaches only the popular apparatus of realizing the video decompression (Column 7, Line 54 to Column 8 Line 6)

In Column 8, Line 59 to Column 9 Line 5 teaches only "Re-compressing" the decompressed block before storing the an off-chip DRAM memory. Wee et al. US 6697061 teaches mainly the video editing in saving times of motion estimation and does not teach the video stream decoding at all (especially it focuses on line 34-38 of "Video Editing" and distributing). In Column 4 line 31-36 teaches only saving of searching times in motion estimation, not video stream decoding as this invention of video decompression.

Applicant believes Claim 16 in the present invention needs to make clearer and needs a minor change to avoid ambiguity. Therefore, applicant respectfully submits you allow Claim 16, with the following updated Claim:

Claim 16: An apparatus for decoding a video stream, comprising:

a bit stream decoding unit including a VLD, variable length deciding and

reconstructing the video bit stream to DCT matrix and a DeQuantization

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multiplying the DCT matrix to inverse transforming and recovering the block of pixel matrix;

the first on-chip storage device for storing compressed video data stream and the second on-chip storage device for storing the corresponding decompressed pixel data of at least one previous block ;

a device comparing a coming compressed stream to at least one previously saved stream; and

a device of selecting one of previously saved decoded blocks of pixel matrix to represent a target block if a target block is identical to one of the previously saved blocks.

Therefore, the Applicant respectfully submits you allow Claim 16.

Claim 17: The present claim teaches that the comparator used to decide whether a block match is found in previous blocks is used to select the matched block as the target block. Which is different from the quoted prior art quoted in **Wee et al. US 6697061** (Column 5 line 27-33) which teach again, the saving of times of compressing the block pixels in motion estimation in saving times of block video compression specifically in motion estimation only, but does not teach any idea in **comparing the block and selecting the result of a previous block to represent the targeted video block of bit stream.**

Therefore, the Applicant respectfully submits you allow Claim 17. with the following

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updated Claim:

Claim 17. The apparatus of claim 16, wherein an output of a comparator is used to select the decoded pixels stored in the on-chip second temporary buffer to represent the target block pixels.

Claim 18: The present claim teaches that the matched block in previous blocks is copied to represent the target block. Which is different from the quoted prior art quoted in Wee et al. US 6697061 (Column 5 line 27-33) which teaches again, the saving of times of compressing the block pixels in motion estimation by saving times of calculating the motion vectors in saving times of block video compression specifically in motion vectors only.

Therefore, the Applicant respectfully submits you allow Claim 18.

Claim 20 recites an apparatus of this invention of efficient I-type video frame bit stream or a still image JPEG image decoding. Neither Owen et al. US 6028635 nor Wee et al. US 6697061 Column 2 line 32-37 teaches how the still image or I-type frame of a video stream leverages previous block of data for decompressing the intra-coded block of data.

Therefore, the Applicant respectfully submits you allow Claim 20, with the following updated Claim:

Claim 20. The apparatus of claim 16, wherein in decompressing the intra-coded block of data, the apparatus leverages previous block of data for decompressing the intra-coded block of data.

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JPEG still picture, one of previously decoded and saved blocks is selected to represent the target block. Which is different from Owen and Wee which are either in video decompression and video compression.

Amendments to the Claims:

1. (Currently Amended) A method for decoding a video stream,
comprising: